AMENDMENTS TO THE CLAIMS

Claim 1. (Currently amended) An information storage method comprising:

a first step of inputting information to be stored to a plurality of information carrier storage means that interact with each other, including by nonlinear diffusion of information carriers; and

a second step of autonomically and periodically reproducing a representation of said information input in the first step after the representation of the information once changes with a disturbance;

wherein time development of the information carriers due to the interaction between said plurality of information carrier storage means is expressed by:

$$\Delta z(r,t) = R(r,t) + D\left[\sum_{nn} f[z_{nn}(r,t)] - \sum_{nn} f[z(r,t)]\right] - D' f[z(r,t)]$$

and

$$f[z(r,t)] = 1 + \frac{1}{1+\exp[-\beta\{z(r,t) - z_0\}]}.$$

Claims 2-3. (canceled)

Claim 4. (Currently amended) The information storage method according to claim 1, wherein interaction of said information carrier storage means includes dissipation of information carriers.

Claim 5. (original) The information storage method according to claim 4 wherein said dissipation is nonlinear dissipation.

Claim 6. (original) The information storage method according to claim 4 wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation.

Claim 7. (canceled)

Claim 8. (original) The information storage method according to claim 1 wherein said disturbance is random addition of information carriers.

Claim 9. (original) The information storage method according to claim 1 wherein said disturbance is permutational addition of information carriers.

Claim 10. (original) The information storage method according to claim 1 wherein said disturbance is evenness of integral values of added amounts of information carriers occurring periodically.

Claim 11. (original) The information storage method according to claim 4 wherein the amount totaling a difference between the amount of said disturbance and the amount of said dissipation and the representation of said information does not exceed a predetermined threshold value.

Claim 12. (original) The information storage method according to claim 1 wherein the first step inputs information carriers expressed by n-dimensional vectors (where n is a natural number) as information to n pieces of information carrier storage means distributed in an m-dimensional space (where m is a natural number) and functioning to hold information carriers of a real number value.

Claim 13. (original) The information storage method according to claim 12 wherein said second step includes a step of adding a predetermined amount of information carriers to said information carrier storage means, then having a predetermined amount of information carriers diffused between a predetermined set of said information carrier storage means, having a predetermined amount of information carriers dissipated from said information carrier storage means, and having the diffusion and the dissipation repeated until the amount of information carriers of each said information carrier storage means reaches an equilibrium state.

Claim 14. (original) The information storage method according to claim 12 wherein said second step includes a step of having each said information carrier storage means to diffuse information carriers to neighboring ones of said information carrier storage means.

Claim 15. (Currently amended) An information storage device having a function of autonomically and periodically reproducing representation of input information after the representation of the information once changes due to a disturbance, comprising:

a plurality of information carrier storage means that interact with each other, including by nonlinear diffusion of information carriers; wherein time development of the information carriers

due to the interaction between said plurality of information carrier storage means is expressed by:

$$\Delta z(r,t) = R(r,t) + D\left[\sum_{nn} f[z_{nn}(r,t)] - \sum_{nn} f[z(r,t)]\right] - D' f[z(r,t)]$$

and

$$f[z(r,t)] = 1 + \frac{1}{1 + \exp[-\beta\{z(r,t) - z_0\}]}.$$

Claims 16-17. (Canceled)

Claim 18. (Currently amended) The information storage device according to claim 15, wherein interaction of said information carrier storage means includes dissipation of information carriers.

Claim 19. (original) The information storage device according to claim 18 wherein said dissipation is nonlinear dissipation.

Claim 20. (original) The information storage device according to claim 18 wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation.

Claim 21. (canceled)

Claim 22. The information storage device according to claim 15 wherein said disturbance is random addition of information carriers.

Claim 23. (original) The information storage device according to claim 15 wherein said disturbance is permutational addition of information carriers.

Claim 24. (original) The information storage device according to claim 15 wherein said disturbance is evenness of integral values of added amounts of information carriers occurring periodically.

Claim 25. (original) The information storage device according to claim 18 wherein the amount totaling a difference between the amount of said disturbance and the amount of said dissipation and the representation of said information does not exceed a predetermined threshold value.

Claim 26. (original) The information storage device according to claim 15 wherein information carriers expressed by n-dimensional vectors (where n is a natural number) are input as information to n pieces of information carrier storage means distributed in an m-dimensional space (where m is a natural number) and functioning to hold information carriers of a real number value.

Claim 27. (original) The information storage device according to claim 26 wherein a predetermined amount of information carriers is added to said information carrier storage means,

a predetermined amount of information carriers is diffused between a predetermined set of said information carrier storage means, a predetermined amount of information carriers is dissipated from said information carrier storage means, and the diffusion and the dissipation are repeated until the amount of information carriers of each said information carrier storage means reaches an equilibrium state.

Claim 28. (original) The information storage device according to claim 26 wherein each said information carrier storage means is controlled to diffuse information carriers to neighboring ones of said information carrier storage means.

Claim 29. (currently amended) An information storage device having the function of reproducing representation of input information autonomically and periodically after the representation of the information once changes due to a disturbance, comprising:

input means supplied with data expressed by n-dimensional vectors (where n is a natural number);

storage means made up of n pieces of information carrier storage means for storing data input to said input means;

control means for adding a predetermined amount of information carriers to data stored in said storage means, diffusing a predetermined amount of information carriers and dissipating a predetermined amount of information carriers;

random number generator for generating a random number and send it to said controller;

judging means for judging whether the change in amount of information carriers in each said information carrier storage means has become below a predetermined value or not; and

output means for outputting a result of arithmetic operation by said controller;

wherein time development of the information carriers due to the interaction between said n pieces of information carrier storage means is expressed by:

$$\Delta z(r,t) = R(r,t) + D\left[\sum_{nn} f[z_{nn}(r,t)] - \sum_{nn} f[z(r,t)]\right] - D' f[z(r,t)]$$

and

$$f[z(r,t)] = 1 + \frac{1}{1+\exp[-\beta\{z(r,t) - z_0\}]}.$$

Claim 30. (Currently amended) A recording medium having recorded an information processing program so as to have it read by a computer, said program comprising:

a first step of inputting information to be stored to a plurality of information carrier storage means that interact with each other, including by nonlinear diffusion of information carriers;

a second step of autonomically and periodically reproducing a representation of information input in said first step after the representation of the information once changes due to a disturbance; and

a third step of outputting information stored;

wherein time development of the information carriers due to the interaction between said plurality of information carrier storage means is expressed by:

$$\Delta z(r,t) = R(r,t) + D\left[\sum_{nn} f[z_{nn}(r,t)] - \sum_{nn} f[z(r,t)]\right] - D' f[z(r,t)]$$

and

$$f[z(r,t)] = 1 + \frac{1}{1 + \exp[-\beta\{z(r,t) - z_0\}]}.$$

Claim 31-32. (Canceled)

Claim 33. (Currently amended) The recording medium according to claim 30, wherein interaction of said information carrier storage means includes dissipation of information carriers.

Claim 34. (original) The recording medium according to claim 33 wherein said dissipation is nonlinear dissipation.

Claim 35. (original) The recording medium according to claim 33 wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation.

Claim 36. (canceled)

Claim 37. (original) The recording medium according to claim 30 wherein said disturbance is random addition of information carriers.

Claim 38. (original) The recording medium according to claim 30 wherein said disturbance is permutational addition of information carriers.

Claim 39. (original) The recording medium according to claim 30 wherein said disturbance is evenness of integral values of added amounts of information carriers occurring periodically.

Claim 40. (original) The recording medium according to claim 33 wherein the amount totaling a difference between the amount of said disturbance and the amount of said dissipation and the representation of said information does not exceed a predetermined threshold value.

Claim 41. (original) The recording medium according to claim 30 wherein the first step inputs information carriers expressed by n-dimensional vectors (where n is a natural number) as information to n pieces of information carrier storage means distributed in an m-dimensional space (where m is a natural number) and functioning to hold information carriers of a real number value.

Claim 42. (original) The recording medium according to claim 41 wherein said second step includes a step of adding a predetermined amount of information carriers to said information carrier storage means, then having a predetermined amount of information carriers diffused between a predetermined set of said information carrier storage means, having a predetermined amount of information carriers dissipated from said information carrier storage

means, and having the diffusion and the dissipation repeated until the amount of information carriers of each said information carrier storage means reaches an equilibrium state.

Claim 43. (original) The recording medium according to claim 41 wherein said second step includes a step of having each said information carrier storage means to diffuse information carriers to neighboring ones of said information carrier storage means.